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Marketing Operations of Dairy Cooperatives

MARKETING OPERATIONS OF DAIRY COOPERATIVES

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The Nation's 296 dairy cooperatives marketed 105.8 billion pounds of milk, or 76 percent of all milk sold to plants and dealers in 1987. Total number of member-producers was 120,603. There were 121 cooperatives operating 229 dairy processing and manufacturing plants, 44 with only milk-receiving stations, and 131 with no milk-handling facilities. Cooperatives sold 14 percent of the Nation's packaged fluid products, 8 percent of the ice cream and ice milk, 83 percent of the butter, 91 percent of the dry milk products, 45 percent of the cheese, and 13 percent of the cottage cheese made in the United States. The traditional method of paying for milk adjusted for butterfat, with or without adjusting for other components, was the prevailing method of paying for member milk. A quality premium program was the incentive offered most frequently by cooperatives.

Key Words: Cooperatives, dairy, marketing, pricing, structure.

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Preface

Information for this report came primarily from a questionnaire sent to all U.S. dairy cooperatives. In addition, some data were estimated for nonrespondents based on their financial statements or other sources.

The 1987 data were for the cooperatives' last fiscal year ended April 1, 1988. Because cooperatives have different fiscal years, their data reflect some differences in time periods. However, by using annual data, the effects of time differences among cooperatives are reduced. Previous surveys covered the fiscal years ended April 1, 1974 and 1981. Hopefully, the effects of time differences on interyear comparison are minimal.

In the report, a number of comparisons are made of regional cooperative operations based on cooperatives' headquarters locations. Because many of the larger cooperatives may have significant operations in regions other than where headquartered, there are a few cases where data may not accurately reflect the level of cooperative activity in a particular region. Care should be taken when making comparisons on a regional basis because different analyses throughout the report used different regional alignments.

Acknowledgment is due other agencies and individuals for providing assistance during this study, most particularly the Estimates Division of USDA's National Agricultural Statistics Service and the Statistics and Technical Services staff of ACS.

Contents

Highlights

Dairy products accounted for 37 percent of the value of all agricultural cooperative marketings during 1987. In that year, dairy cooperatives received or bargained for 76 percent of all milk sold by farmers to the Nation's plants and dealers.

The number of dairy cooperatives dropped from 435 to 296 between 1980 and 1987, a decline of 32 percent. In 1987, 121 cooperatives engaged in processing and manufacturing dairy products, down from 192 in 1980, 291 in 1973, and 856 in 1964. The number of cooperatives selling raw whole milk fell from 352 in 1980 to 251 in 1987.

Cooperatives' share of total volume sold by farmers to plants and dealers has remained essentially constant since 1973 and was 76 percent in 1987. The volume of milk marketed by cooperatives increased in all regions except the South Atlantic Region. Cooperative members' grade A milk marketing in 1987 accounted for 76 percent of the Nation's grade A milk, a 3-percent decline from 1980. Marketing of manufacturing grade milk remained at 57 percent. About 55 percent of total cooperative volume, including intercooperative sales, was sold as raw whole milk, a decline from 60 percent sold raw in 1980.

There were 120,603 member-producers delivering milk to 289 dairy cooperatives with direct members. The three regions of East North Central, West North Central and Middle Atlantic together accounted for 81 percent of all member-producers and 61 percent of cooperative milk volume.

Dairy cooperatives owned 508 plants in 1987. They operated 279 of these plants only to receive and ship milk. No cream-receiving stations were reported in 1987; they had become extinct. Cheesemaking was carried on in 132 plants. Other major operations included manufacturing dry products in 108 plants and packaging fluid products in 92 plants. Butter was churned in 69 plants, compared with 95 plants in 1980 and 170 plants in 1973.

Cooperatives' net sales of butter, dry milk products, and cheese increased from 1973 to 1980. Cooperatives' share of national butter production increased sharply from 64 to 83 percent during this period, and their net sales increased by 184 million pounds. Cooperatives' share and net sales of dry milk products (nonfat dry milk, dry buttermilk, and dry whole milk) also increased from 1980 to 1987, reaching 91 percent of the Nation's output. Cooperatives' sales of cheese showed a 29-percent increase, from 1.87 billion pounds to 2.42 billion pounds. However, national cheese production increased by 34 percent during the period. As a result, cooperatives' share of the natural cheese market declined from 47

percent in 1980 to 45 percent in 1987. Sales of packaged fluid milk products decreased both in volume and share of market. The 7.4 billion pounds marketed was 14 percent of the Nation's production, down from 16 percent in 1980. Cooperatives' sales of cottage cheese and ice cream (including ice milk) as a percentage of national production also decreased, to 13 percent and 8 percent, respectively. In 1987, cooperatives marketed 10 percent of frozen product mix, 45 percent of bulk condensed milk, and 83 percent of the Nation's production of dry whey products.

Most dairy cooperatives continue to be relatively small business organizations. However, through consolidation and growth, an increasing amount of dairy products was sold by larger cooperatives. The 20 largest dairy cooperatives received 74 percent of all grade A milk marketed through cooperatives. About 81 percent of cooperative milk processing and manufacturing was carried out by the 20 largest cooperatives with plant operations.

The traditional method of paying for milk adjusted for butterfat, with or without adjusting for other components, was the most prevailing way cooperatives paid for member milk. The component other than butterfat that most often was the basis of price adjustment was protein, followed by solids-not-fat. Findings were based on responses by 155 cooperatives.

Eighty-six of these respondent cooperatives offered incentive programs to induce members to produce milk of high quality and at the time and volume desirable to cooperatives. Quality incentive was offered by 85 of the 86 cooperatives. It was the backbone of all other incentive programs.

Marketing Operations of Dairy Cooperatives

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Dairy cooperatives that are farmer owned and operated continue to provide the most significant channel for marketing milk from the Nation's dairy farms.

In line with trends both in the rest of the industry and among dairy farms, these cooperatives are becoming fewer but larger. In addition, cooperatives process, manufacture, and market a large or dominant proportion of some of the Nation's dairy products.

This report, fifth in a series of periodic appraisals of the scope and performance of dairy cooperatives, describes their continuing adaptation to an ever-changing marketing environment.

COOPERATIVE INDUSTRY PROFILE

Between 1980 and 1987, the number of dairy cooperatives decreased from 435 to 296, a decline of 32 percent. This was a slightly faster decline than the 27-percent drop recorded from 1973 to 1980. In 1987, more than 80 percent of all dairy cooperatives were in the Middle Atlantic, East North Central, and West North Central Regions (table 1 and fig. 1). The greatest reduction in number of dairy cooperatives between 1980 and 1987 was in the West North Central Region, where the number dropped from 124 to 77, a 38-percent decline. In the East North Central Region, the number of dairy cooperatives reduced from 118 to 75. The Middle Atlantic Region emerged as the region with the most dairy cooperatives, counting 92 in 1987.

In 1987, 121 cooperatives processed and manufactured dairy products—41 percent of all dairy cooperatives. This was slightly less than the 44 percent recorded in 1980 when 192 cooperatives were processing and manufacturing. Seventy-nine percent of the decline in cooperatives that processed and manufactured dairy products occurred in the East North Central and West North Central Regions.

The number of cooperatives operating only milk-receiving stations declined from 97 in 1980 to 44 in 1987. They represented 15 percent of all dairy cooperatives. Thirty-five of these cooperatives, nearly 80 percent, were in the West North Central Region. No cooperative reported operating cream-receiving stations.

Cooperatives that did not physically handle milk and other dairy products increased from 34 to 44 percent of all U.S. dairy cooperatives, continuing a trend also observed from 1964 to 1980. Sixty percent of these cooperatives were in the Middle Atlantic Region.

The number of cooperatives marketing selected major dairy products declined or remained the same in all regions (table 2). More cooperatives continue to sell raw whole milk in bulk than any other product. While the number declined from 352 in 1980 to 251 in 1987, the proportion of dairy cooperatives performing this activity increased from 81 percent in 1980 to 85 percent in 1987.

The number of cooperatives marketing various products decreased substantially. Based on the percentage of decrease of cooperatives engaged in the dairy product marketing activities surveyed, the distribution of cottage cheese and ice cream declined the most in 7 years. Between 1980 and 1987, the number of cooperatives distributing cottage cheese and ice cream each decreased 45 percent. Only 23 cooperatives

marketed cottage cheese and 21 cooperatives sold ice cream in 1987.

Butter was distributed by 82 cooperatives, a 45-percent decrease from the 148 in this business in 1980. Twenty-eight percent of all dairy cooperatives distributed butter.

Except for bulk whole milk, the smallest percentage of decrease in number of cooperatives occurred in those distributing cheese and nonfat dry milk. Still, they decreased by 40 and 35 percent, respectively. In 1987, 94 cooperatives, or 32 percent of all dairy cooperatives, distributed cheese. Thirty-one dairy cooperatives, or 10 percent, distributed nonfat dry milk.

Eleven percent of all dairy cooperatives distributed packaged fluid milk products, down from 14 percent in 1980. The number of cooperatives packaging fluid products decreased by 42 percent, from 59 to 34.

Figure 1—Number of Dairy Cooperatives by Headquarters Region, 1987

MILK RECEIPTS AND UTILIZATION

In 1987, cooperatives received or bargained for 105.8 billion pounds of milk (net of intercooperative transfers), or 76 percent of total volume sold by farmers to the Nation's plants and dealers (table 3). Cooperatives' share of this volume decreased by less than 1 percent between 1980 and 1987. The volume marketed by cooperatives increased 11 percent in the period, while the Nation's milk sold to plants and dealers rose 12 percent.

Cooperatives' share of the market varied considerably by region, based on their headquarter locations (fig. 2). The Central Region, with the largest number of dairy cooperatives, had 63 percent of total U.S. cooperative milk volume in 1987, down from 64 percent in 1973. Between 1980 and 1987, the volume of milk marketed by cooperatives headquartered in the region increased from 61.7 billion pounds to 66.5 billion pounds. Cooperatives' share of all milk sold to plants and dealers in this region continued to increase, from 89 percent in 1980 to 90 percent in 1987.

In the Pacific Region, the Nation's fastest growing milk production region, milk sold to plants and dealers increased 32 percent between 1980 and 1987. During the same period, cooperative volume rose 46 percent. As a result, cooperatives' share of milk in the region increased 6 percent, from 57 to 63 percent.

Cooperatives' share of all milk marketed decreased in the other three regions, with a significant decrease (6 percent) in the Northeast. However, the South Atlantic was the only region in which milk volume marketed by cooperatives declined.

Supply, Location, and Grade

There were 120,603 member-producers delivering milk to 289 dairy cooperatives with direct members (table 4). The East North Central Region had the most cooperative members (47,378), followed by the West North Central Region (33,361) and the Middle Atlantic Region (16,343). Together the three regions had 81 percent of total member-producers, but only 61 percent of milk delivered to the dairy cooperative. Delivery per member-producer in the Pacific Region was 4,438,728 pounds, the highest among all regions. It was about 8 times as much as delivery per member-producer located in the West North Central Region and about 6 times as much as in the East North Central Region.

Slightly more than 30 percent of total milk received directly from member-producers and marketed by cooperatives came from farms in the East North Central Region (table 4 and fig. 3), a 2-percentage-point decrease from 1980. Farms in the West North Central and Middle Atlantic Regions supplied 18 and 12 percent, respectively, of the total U.S. cooperative member volume, each a percentage-point decline from the previous survey. As a matter of fact, only in the Pacific Region did member milk increase relative to total U.S. cooperative member milk, from 10 to 14 percent. All other regions declined.

Ninety percent of the supply of cooperatives' manufacturing grade milk came from farms in the two North Central Regions—51 percent from the West North Central Region and 39 percent from the East North Central Region. There was a 1.5-billion-pound (25 percent) decrease from 1980 to 1987 in the marketing of manufacturing grade milk in the West North Central Region.

Reflecting the continuing conversion from manufacturing grade milk to grade A production and the generally increased production of grade A milk, cooperatives marketed 13 percent more grade A milk for their member-producers and 19 percent less manufacturing grade milk in 1987 than in 1980.

Some 264 cooperatives marketed grade A milk for farmer-members and 144 marketed manufacturing grade. In 1987, cooperative marketings of grade A milk for member-producers totaled 94.1 billion pounds or a market share of 76 percent of all grade A milk. The market share was a 3-percentage-point drop from the 79-percent share in 1980. In the current survey year, cooperatives marketed 9.1 billion pounds of milk of manufacturing grade and maintained the same market share of 57 percent as in 1980.

The proportion of grade A milk marketed by cooperatives varied from 59 percent in the Middle Atlantic Region to 92 percent in the West

Figure 2—Milk Sold to Plants and Dealers Reported by NASS, and Cooperative Share of Total by Geographic Region, 1987

	Pacific	Mountain	Central	Northeast	South Atlantic	United States
			Billion pounds			
Region total	22.7	7.5	73.9	25.7	9.3	139.1
Cooperative volume	14.4	4.8	66.5	15.0	5.1	105.8
			Percent			
Cooperative share	63	64	90	58	55	76

North Central Region. From 1980 to 1987, a significant increase in quantities marketed and in cooperatives' share of grade A marketings was found in the Pacific Region, showing a 6-point share increase and 47 percent more grade A milk. The other increase in market share was in the South Atlantic Region, showing a mere 1-point gain. All other regions either held their own or declined in grade A milk market shares. The East South Central Region lost 17 market share points and 19 percent of the cooperative volume of grade A milk. However, this region did have an increase in both cooperative market share and quantity marketed of the small amount of manufacturing grade milk produced in the region. The other two noted drops in cooperative grade A milk market share occurred in the New England Region (10-point decrease) and the East North Central Region (7-point decrease).

Supply by Source

In 1987, 91 percent of the 114.7 billion pounds of milk received by dairy cooperatives came directly from farmers, up from 88 percent in 1980 (table 5). Most of the remainder came from other cooperatives. Cooperatives in the Western Region received more than 97 percent of their milk directly from producers, a big jump from the 84 percent reported in 1980. On the other hand, cooperatives in the Eastern Region received only 86 percent of their milk directly from producers. In 1987, 268 cooperatives received 104.5 billion pounds of grade A milk from all sources. A total of 145 cooperatives received 10.2 billion pounds of manufacturing grade milk, a decrease of 85 cooperatives from the 1980 survey.

Utilization of Milk Supply

In 1987, 114.7 billion pounds of raw milk was received from all sources by the 294 cooperatives reporting milk receipts. Fifty-five percent of the total cooperative volume, including that received from other cooperatives, was sold as raw whole milk, down from the 60 percent reported in 1980 (table 6).

A general trend for cooperatives has been to sell proportionately less milk raw and process or manufacture more in their own plants. In the Western Region, milk sold raw decreased from 56 percent of total cooperative volume to 39 percent in 1987. In other words, cooperatives processed or manufactured 61 percent of their milk that year, up from 44 percent in 1980. The ratio of milk sold raw to milk processed or manufactured was about 60 to 40 in the Central Region in 1980. It was about 50 to 50 in 1987. Although the trend was not as pronounced in the Eastern Region, it followed the same trend, nonetheless.

PLANT OPERATIONS

In 1987, cooperatives owned 508 plants that performed a variety of marketing functions (table 7). As in 1973 and 1980, almost 70 percent of these plants were in the East and West North Central Regions, with 155 and 194 plants, respectively. In third place, the Middle Atlantic Region had 34 plants. In other regions, plant numbers ranged from 12 in the East South Central Region to 31 in the South Atlantic.

Just under 55 percent (or 279 plants) served only as milk receiving stations, increasing considerably from the 35 percent (242 plants) reported in 1980. Cheesemaking was the most frequently performed manufacturing operation, with 132 plants making natural cheese. This was 42 fewer than the number in 1980. Eighty-one percent of the cooperative cheese plants were in the two North Central Regions.

Other important milk manufacturing functions included butter manufacturing by 69 plants, down from the 95 plants reported in 1980, and the production of dry milk products by 108 plants. Thirty-six percent of the 69 butter plants were concentrated in the West North Central Region. Most of the other butter plants were in the Pacific and East North Central Regions. Exactly two-thirds of all drying operations were concentrated in the two North Central Regions.

There were 92 cooperative plants engaged in fluid milk packaging. Unlike the milk manufacturing plants, the packaging plants were scattered more uniformly throughout all regions. In 1987, the West North Central Region had the largest number, 23 plants, followed by the South Atlantic Region with 17 plants.

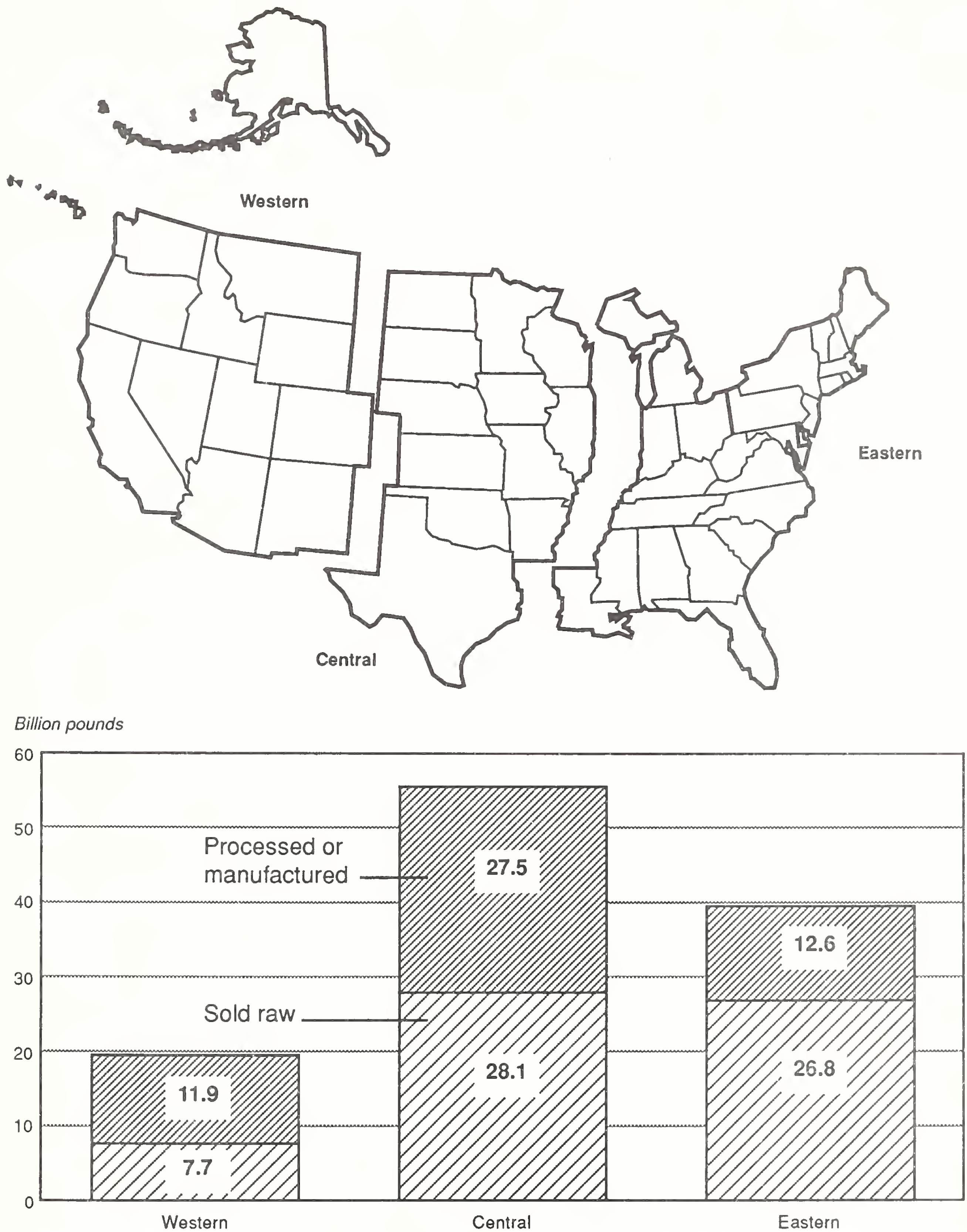
Cooperatives reported 42 plants making ice

Figure 3—Milk Sold to Plants and Dealers and Share of Cooperative Members, by Grade and Production Region, 1987

	Pacific	Mountain	West North Central	West South Central	East North Central	East South Central	New England	Middle Atlantic	South Atlantic	United States
						Billion pounds				
Grade A Milk										
Region total	22.1	6.5	15.6	6.9	32.3	5.0	4.4	21.3	9.1	123.2
Cooperative Volume	14.0	5.4	14.4	5.8	27.8	3.4	3.2	12.6	7.5	94.1
						Percent				
Cooperative Share	63	83	92	85	86	67	72	59	82	76
						Billion pounds				
Manufacturing Grade Milk										
Region total	0.6	1.0	6.4	0.1	7.1	0.5	–	0.1	0.2	15.9
Cooperative Volume	0.2	*	4.6	*	3.6	0.2	–	0.07	*	9.1
						Percent				
Cooperative Share	43	*	72	*	50	34	–	75	*	57

** Not shown to avoid disclosing proprietary information*
– No production

Figure 4 —Utilization of Cooperatively Marketed Milk, by Region, 1987



cream and 32 making cottage cheese throughout the Nation in a pattern similar to the fluid milk packaging plants.

DAIRY PRODUCTS MARKETED

This section and the tables that follow describe the net volumes of major dairy products marketed by cooperatives by region after subtracting transactions among cooperatives. The regions are based on the locations of cooperatives' headquarters. Also, comparisons are made between the net volumes marketed by cooperatives and total U.S. production. Other tables show the number of cooperatives marketing dairy products and the volume marketed by selected size groupings. The tables by size groupings show both the pounds marketed and the percentage of total cooperative sales without adjustments for intercooperative transactions.

Raw Whole Milk

Raw whole milk is the commodity most often sold by dairy cooperatives. In 1987, net raw milk sales by 251 cooperatives amounted to 53.6 billion pounds or 51 percent of net total volume of raw milk received by cooperatives (table 8). While this represented an increase in volume marketed over 1980, the raw milk sales as a percentage of total receipts dropped substantially from 55 percent in 1980 and 63 percent in 1973, reflecting a trend toward increased further processing and marketing by cooperatives. During the past 7 years, the volume of raw milk sold decreased in all regions except the Northeast and the Pacific, while the percentage of milk marketed in raw form decreased in all regions.

Butter

Excluding intercooperative transfers, cooperatives distributed a net volume of 917 million pounds of butter in 1987 (table 9). This was a 25-percent increase over the 1980 volume and represented 83 percent of total U.S. production, a 19-point gain.

Dairy cooperatives in the Central Region accounted for 58 percent of cooperative butter sales. The Pacific Region almost doubled its sales in 7 years and represented 31 percent of cooperative butter volume.

While the volume of butter distributed increased, the number of cooperatives distributing butter continued to decline sharply, from 740 in 1964, to 207 in 1973, to 148 in 1980, and to only 82 in 1987 (table 10). Eighty-two percent of the butter distributed by cooperatives was by the 11 in the size group that handled 20 million pounds or more. Cooperatives distributing less than 20 million pounds of butter experienced a 40-percent decline in volume from 1980 to 1987 and accounted for only 18 percent of volume distributed by cooperatives in 1987, compared with 30 percent in 1980 and 39 percent in 1973. Also in 1987, the volume of intercooperative sales of butter was minuscule.

Dry Milk Products

Excluding intercooperative transfers, cooperatives distributed 1.2 billion pounds of dry milk products, 91 percent of the Nation's production (table 11). This volume included nonfat dry milk, dry buttermilk, and dry whole milk. It represents a slight increase in cooperatives' share of total production, up from 87 percent in 1980 and 85 percent in 1973.

Cooperatives in the Central Region distributed 52 percent of all dry milk products of cooperatives, down from 62 percent in 1980. While the Eastern and Central Regions showed reduced dry milk product volume, cooperatives in the Western Region expanded their volume by 76 percent in 7 years and distributed 38 percent of cooperatives' sales. Increases in the share of U.S. production distributed by cooperatives occurred in all regions except the Eastern.

The number of cooperatives distributing dry milk products declined to 31, down from 48 in 1980, 62 in 1973, and 212 in 1964 (table 12). Eighty-two percent of cooperatives' dry milk products was distributed by 11 cooperatives in the more than 20-million-pound size group. The volume distributed by cooperatives in all size groups declined from 1980 to 1987.

Cheese

In 1987, cooperatives distributed 2.4 billion pounds of cheese, excluding cottage cheese.

This was an increase of 29 percent from that distributed in 1980. During this period, the volume of total cheese made by all U.S. firms increased 34 percent. As a result, cooperatives' share of the national cheese market decreased from 47 percent in 1980 to 45 percent in 1987 (table 13).

Cooperatives in the Central Region continued to distribute the largest share of cheese, accounting for more than half of cooperatives' net sales, down substantially from 72 percent in 1980. Major increases in both the volume distributed (more than doubled) and the share of the total manufactured occurred in the Eastern Region. Volume increases reported in all other regions were less, especially in the Central Region.

From 1980 to 1987, the number of cooperatives distributing cheese declined 40 percent—from 158 to 94—reflecting consolidation of cheesemaking into fewer cooperatives (table 14). Cooperatives distributing less than 10 million pounds annually declined by 49 percent to 64 cooperatives, while those distributing more than 10 million pounds dropped from 33 to 30. Only 14 large cooperative cheese distributors accounted for 82 percent of all cooperative cheese sales in 1987; the 4 largest cooperatives accounted for 55 percent.

Among the 2.4 billion pounds of natural cheese distributed by cooperatives, the vast majority was American-type cheese. The next major category was 299 million pounds of Italian-type cheese marketed by 15 cooperatives. The volume represented 17 percent of 1987 U.S. Italian cheese production. Furthermore, eight cooperatives distributed 63 million pounds of Swiss cheese, which accounted for 28 percent of U.S. Swiss cheese production. Another four cooperatives marketed 3.6 million pounds of Muenster and brick cheese. It was only 3 percent of U.S. production of Muenster and brick cheese.

Packaged Fluid Milk Products

Cooperatives distributed 7.4 billion pounds of packaged fluid milk products in 1987, reversing an upward trend from 1964 on, both in volume and share of total sales of all U.S. firms (table 15). The cooperative market share was 14 percent, down from 16 percent in 1980. The drop in volume represented a 10-percent decrease from 1980 to 1987. In the same period, U.S. sales increased by 7 percent. In this report, pounds of packaged fluid milk distributed by cooperatives are converted from quart equivalents of products sold. Total industry sales are based on total pounds of milk sold to plants and dealers less the whole milk equivalent used in manufacturing.

Cooperatives in all regions experienced decreases from 1980 to 1987 in both volume distributed and their share of all sales. Cooperatives in the South Atlantic Region had a 37-percent decrease in volume distributed, a 6-point drop in regional market share. Those in other regions recorded some loss in volume and a 2-point loss in market share in each region.

The number of cooperatives distributing packaged fluid milk products decreased 42 percent, from 59 in 1980 to 34 in 1987 (table 16). The nine large-scale cooperative distributors of over 100 million quart-equivalents each held 80 percent of all cooperative sales.

Cottage Cheese

In 1987, cooperatives distributed 195 million pounds of cottage cheese, down 11 percent or 25 million pounds from the volume distributed in 1980 (table 17). Cooperatives' share of total U.S. production declined to 13 percent, from 22 percent in 1980.

The number of cooperatives distributing cottage cheese dropped from 44 to 23 in 1987 (table 18). As with fluid milk packaging, the larger cottage cheese distributors are assuming a greater share of cooperatives' sales. The six cooperatives, each distributing more than 10 million pounds a year, accounted for 78 percent of all cooperatives' sales in 1987.

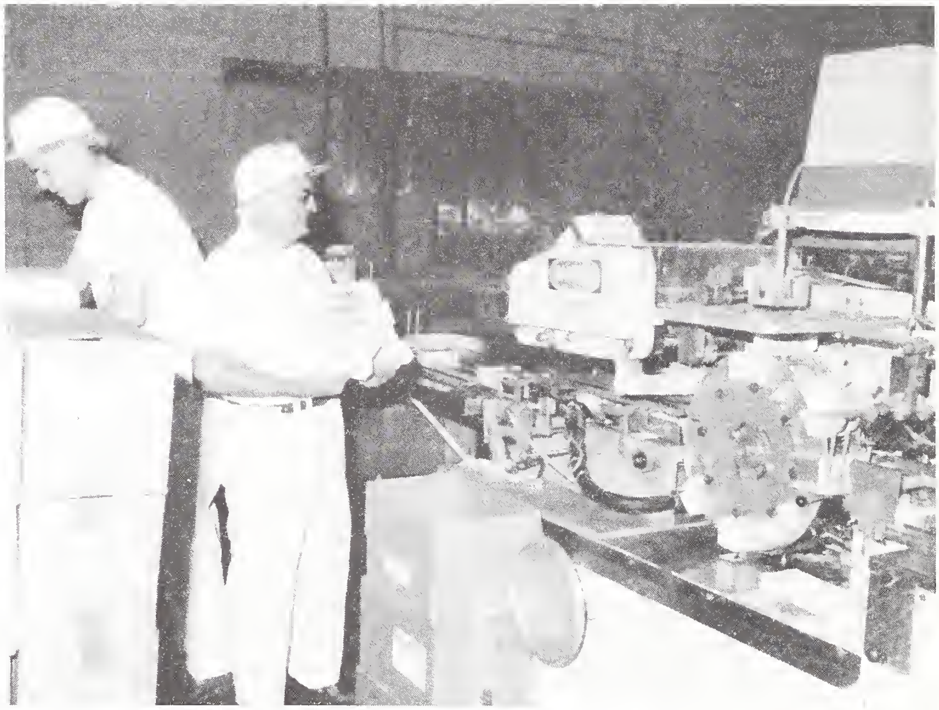
Ice Cream and Ice Milk

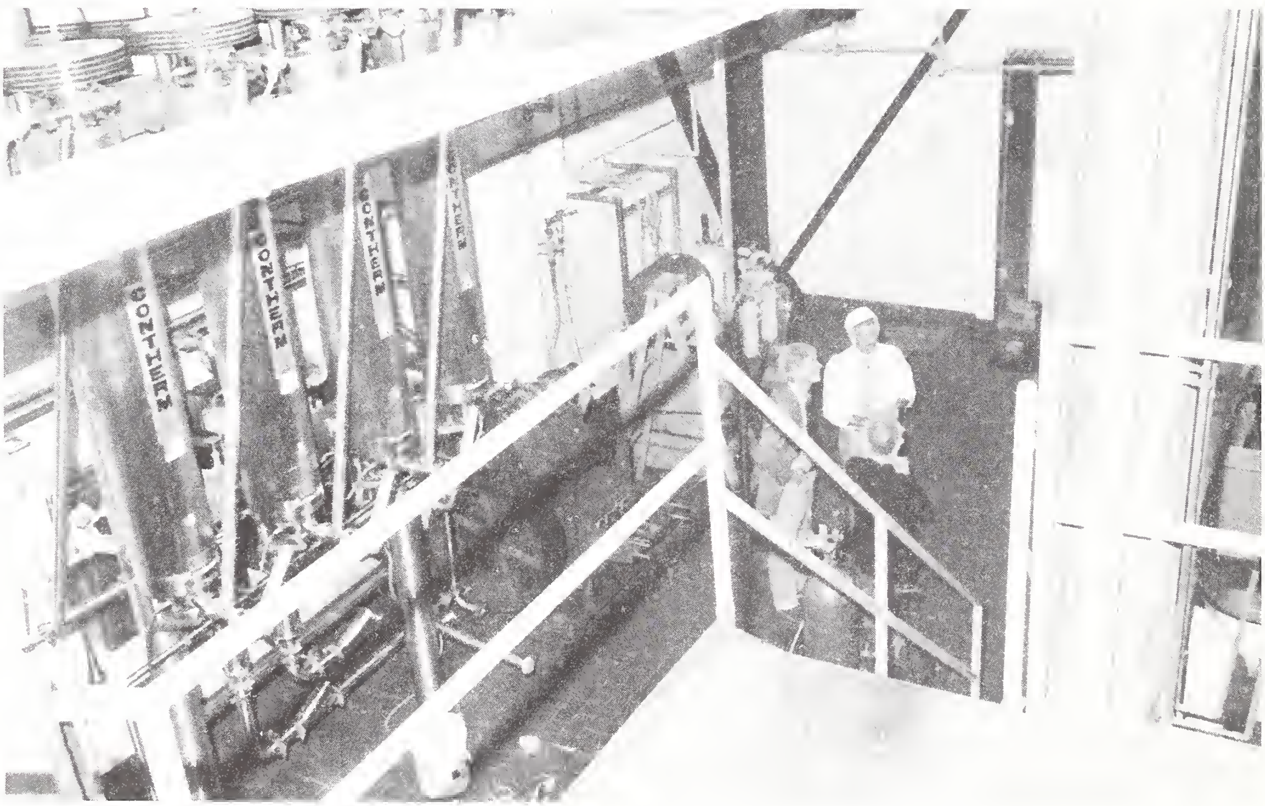
Cooperatives continue to play a minor role in the distribution of ice cream and ice milk. Cooperatives' share of the Nation's production of these frozen products decreased from 10 to 8 percent in 1987 (table 17).

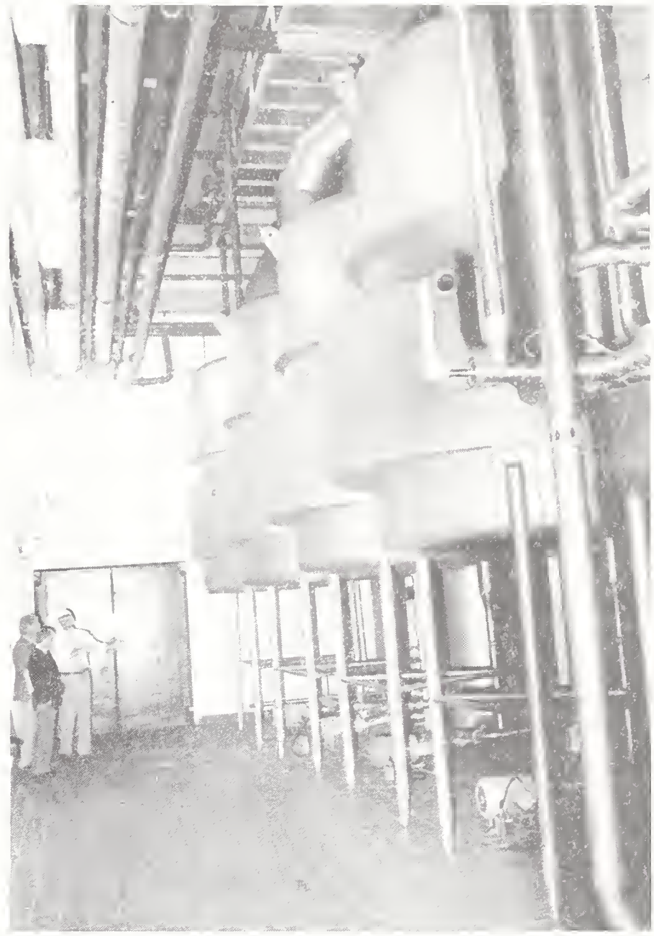
The number of cooperatives distributing these products dropped from 38 in 1980 to 21 in

Right, a butter-printing operation inside a dairy plant.

Below, a modern dairy operation is a maze of pipes and other equipment.







Top left, a refrigerated warehouse at a dairy plant.

Left and top right, evaporators for making condensed dairy products.

1987, continuing the steady decline from 143 in 1964 (table 19). Only five cooperatives, each with sales of more than 4 million gallons, distributed 91 percent of total cooperative volume in 1987, further reflecting the size concentration observed elsewhere in the cooperative dairy processing industry.

Bulk Condensed Milk Products

In 1987, U.S. firms produced 1,383 million pounds of bulk condensed milk (table 17). In that same year, 20 cooperatives sold 622 million pounds or 45 percent of total U.S. production, up sharply from 15 percent in 1980. This probably reflects increased usage of this product by the trade for fortifying solid content in milk and milk products.

Of the 20 cooperatives reporting distribution of bulk condensed milk, the 13 largest accounted for 94 percent of all cooperatives' sales (table 20). The volume sold by the 10-million-plus-pound group increased from 91 to 588 million pounds, an increase of 650 percent.

Condensed Whey

In 1987, 11 cooperatives reported sales of 69 million pounds or 95 percent of U.S. production (table 17). Comparable data for 1980 showed that cooperatives reporting sales of condensed whey sold 59 percent of U.S. production. Total U.S. production in 1987 was lower than in 1980. This was probably because more firms were processing whey into dried forms, and when condensed whey was needed, it was sold out of cooperative plants.

Dry Whey Products

From 1980 to 1987, the percentage of dry whey products sold by cooperatives increased slightly from 81 percent to 83 percent of total U.S. production (table 17). In 1987, 22 cooperatives distributed 913 million pounds of dry whey products, net of intercooperative transfers. As with many other products, some large-scale cooperatives distributed most of the dry whey products produced by cooperatives (table 20). The largest 12 cooperatives accounted for 90 percent of total cooperative sales.

Frozen Product Mix

In 1987, 21 cooperatives reported sales of 73 million gallons of frozen product mix (table 17). This was 10 percent of U.S. production, up from 7 percent estimated in 1980. This does not include any ice cream mix used by cooperatives to make ice cream.

Cooperative Concentration Ratios

Table 21 shows for 1973, 1980, and 1987 the 4 largest, 8 largest, and 20 largest cooperatives' proportion of all cooperatives' receipts of grade A milk from farmers, milk processed or manufactured, and sales of selected products. It also shows the larger cooperatives' proportion of receipts, processed or manufactured volume, and sales as a percent of total U.S. production. However, it should be noted that the cooperatives included in each size group are not identical. For example, the four largest cooperatives selling butter are not necessarily the four largest marketing cheese.

Because the trend has been for dairy cooperatives to become fewer in number and larger in size, more and more marketing activities have been carried out by the larger cooperatives. In 1987, the 20 largest cooperatives, in terms of receipts of grade A milk, received 74 percent of the grade A milk marketed by farmers through cooperatives, up from 66 percent in 1980. They marketed 56 percent of the total U.S. volume. The 20 largest cooperatives with processing and manufacturing operations accounted for 81 percent of all processing and manufacturing by cooperatives, up 13 points from 1980. They also processed or manufactured 34 percent of the total U.S. milk volume, down from the 40 percent reported in the previous survey.

The 20 largest cooperatives had an overwhelming share among cooperatives of each of the following products: packaged fluid milk distribution, 98 percent; butter, 94 percent; dry milk products, 94 percent; and cheese, 88 percent. However, compared with the Nation's total production, their shares were not as significant. The 20 largest dairy cooperatives sold only 13 percent of the Nation's packaged fluid milk and 40 percent of cheese. They dominated only in marketing the so-called last

resort products, butter and dry milk products.

The four largest cooperatives in each product line continued to sell a significant proportion of total cooperative volume. Their shares of total U.S. production of the four major products increased somewhat from 1980 to 1987. However, their shares were not really significant.

METHODS OF PRICING MILK TO PAY MEMBER-PRODUCERS

Dairy cooperatives were asked to describe methods of pricing members' milk. Information on pricing incentive programs was also collected.

A total of 155 cooperatives responded to the question. This represented 52 percent of all dairy cooperatives. The 155 cooperatives accounted for 87 percent of milk the Nation's cooperatives received directly from member-producers (table 22). The difference between the percentages indicates the cooperatives that answered the pricing question were larger in terms of volume than those that did not respond. The four basic pricing methods are:

1. Traditional method of paying for milk adjusted for butterfat.
2. Traditional method of paying for milk adjusted for butterfat, and for other components.
3. Pricing on milk components.
4. Basing price on product yields.

A total of 86 cooperatives (55 percent of the respondents) used method 1, the most traditional way, to pay for members' milk.

A variation on this traditional method is adjusting milk price not only for butterfat but also for other component(s) (method 2). Fifty cooperatives reported using this method to pay for milk received from members.

California cooperatives price members' milk on its components (method 3). The seven dairy marketing cooperatives are regulated under the State's milk order, and component pricing is used by the State order to pay producers.

Three cooperatives reported basing milk price on product yields (method 4), or having this pricing option available to members if they preferred.

Several cooperatives used more than one pricing method. Methods 1 and 2 were reportedly being used by 3 cooperatives; methods 1 and 4, by 1 cooperative; methods 2 and 3, by 1 cooperative; and methods 2 and 4, by 2 cooperatives. Two other cooperatives used methods 1, 2, and 3.

Traditional Method of Paying for Milk Adjusted for Butterfat and for Other Components

In total, 58 cooperatives used the traditional pricing method adjusted for butterfat, and for other component(s) (method 2) as the method or one of the methods of paying for milk (table 22). Thirty-five of the 58 reported adjusting prices for protein. Another 19 adjusted prices for solids-not-fat. The remaining four adjusted prices for protein and solids-not-fat. Most (79 percent) using method 2 were in the North Central Region.

Component Pricing Method

A total of 10 cooperatives used component pricing (method 3) as the method or one of the methods to pay for members' milk (table 22). For 5 of the 10 cooperatives, the components priced were butterfat and solids-not-fat. Two other cooperatives priced fluid carrier in addition to butterfat and solids-not-fat. Another two cooperatives priced milk on butterfat and protein. The last paid for milk by pricing on butterfat, solids-not-fat, and protein.

Basing Price on Product Yields

Product yield pricing was used by six cooperatives as the pricing method or one of the pricing methods to pay for members' milk (table 22). Using this method, a formula is usually used to estimate product yields based on milk composition. Four of the cooperatives using product yield pricing paid their producers on butterfat and protein. The fifth said it paid on butterfat, protein, and fluid carrier. The sixth did not say how its producers were paid using this method.

PRICING INCENTIVE PROGRAMS

Of the 155 cooperatives answering the pricing question, 86 offered some kind of incentive program to induce members to produce milk of high quality, and at the time and volume

desirable for cooperatives' operations (table 23). The 86 represented 29 percent of all (296) dairy cooperatives and 47 percent of all members' milk.

Quality premiums were offered by 44 cooperatives, and seasonal premiums were offered by only one. Thirty-one cooperatives offered quality and volume premiums; four offered quality and seasonal premiums; and six offered quality, volume, and seasonal premiums. These latter 41 cooperatives would usually require farmers to meet certain quality requirements before they could qualify for other (volume and/or seasonal) premiums. It must be emphasized that incentive programs offered by 85 of the 86 cooperatives were related to quality.

Table 24 compares the number of cooperatives using various pricing methods for paying members' milk with the number offering incentive programs. Most using the traditional method of paying for milk adjusted for butterfat, and for other components (method 2), offered some kind of incentive programs to members. Fifty-three cooperatives of a total of 58, or 91 percent, offered incentive programs. Among them, 42 were located in the North Central Region.

Only 37 percent, or 34 out of 92 cooperatives using the traditional method of paying for milk adjusted for butterfat (method 1), offered incentive programs to members. Five of 10 cooperatives using component pricing did not offer quality, volume, or seasonal incentives.

Table 1—Dairy cooperatives by type of operation and by headquarters region, selected years

Region 1/	Processing and manufacturing dairy products				Operating milk receiving facilities only				Not physically handling dairy products				Total			
	1964	1973	1980	1987	1964	1973	1980	1987	1964	1973	1980	1987	1964	1973	1980	1987
	Number															
New England	18	10	7	6	4	1	1	0	6	4	4	2	28	15	12	8
Middle Atlantic	22	14	15	10	34	15	5	4	109	104	90	78	165	133	110	92
East North Central	258	133	93	55	21	11	7	3	31	23	18	17	310	167	118	75
West North Central	453	85	42	24	91	97	77	35	20	2	5	18	564	184	124	77
South Atlantic	31	13	9	6	11	0	0	1	16	8	7	5	58	21	16	12
South Central	16	5	3	3	7	3	4	1	13	7	6	3	36	15	13	7
Mountain	17	14	9	5	1	3	1	0	10	3	5	2	28	20	15	7
Pacific	41	17	14	12	0	0	2	0	14	20	11	6	55	37	27	18
All regions	856	291	192	121	169	130	97	44	219	171	146	131	1,244	592	435	296
	Percent															
Percentage of total cooperatives	69	49	44	41	13	22	22	15	18	29	34	44	100	100	100	100

1/ For States included in each region, see figure 1.

Table 2—Cooperatives distributing selected dairy products, by headquarters region, selected years 1/

Item and year	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	South Central	Mountain	Pacific	Total
	Region 2/								
	Number								
Bulk whole milk									
1964	25	160	112	294	46	33	17	43	730
1973	12	128	78	163	17	13	14	33	458
1980	10	102	60	120	12	13	12	23	352
1987	6	88	40	76	11	7	7	16	251
Packaged fluid milk products									
1964	12	16	33	84	36	7	9	18	215
1973	8	10	14	16	13	3	9	12	85
1980	5	7	9	15	9	3/ 2	5	8	3/ 60
1987	3	6	3	8	5	2	4	3	34
Bulk cream									
1964	9	13	197	156	7	12	3	23	420
1973	6	8	116	55	8	4	5	6	208
1980	4	8	76	18	5	2	3	6	122
1987	3	4	35	15	3	2	2	6	70
Ice cream									
1964	3	11	15	55	28	5	9	17	143
1973	3	4	7	22	5	2	8	9	60
1980	2	4	7	12	3	1	4	5	38
1987	1	2	1	6	3	2	4	2	21
Cottage cheese									
1964	11	13	20	18	32	4	9	19	126
1973	4	8	12	9	12	2	9	8	64
1980	3	6	8	9	5	1	4	6	42
1987	2	1	3	6	4	1	4	2	23
Natural cheese									
1964	4	5	184	63	3	8	6	21	294
1973	3	5	115	43	2	3	8	8	187
1980	3	9	89	35	2	4	6	9	157
1987	2	7	50	20	1	3	4	7	94
Butter									
1964	10	14	143	478	29	14	17	35	740
1973	6	6	55	100	7	4	13	16	207
1980	4	9	41	65	4	3	7	15	148
1987	4	5	16	36	4	2	4	11	82
Nonfat dry milk									
1964	6	7	52	105	4	12	10	16	212
1973	2	3	16	14	2	2	6	12	57
1980	2	5	11	11	2	2	4	11	48
1987	2	3	5	5	1	2	4	9	31

1/ Data were tabulated by cooperative's headquarters location. A cooperative may distribute several products.
2/ For States included in each region, see figure 1.
3/ Revised.

Table 3—Cooperative share of milk delivered to plants and dealers, volume by region, selected years 1/

Item and year	Region 2/ Northeast	South Atlantic	Central	Mountain	Pacific	United States
	Million pounds					
Handled by cooperatives 3/						
1957	13,239	3,299	35,538	1,995	3,967	58,038
1964	16,956	4,176	47,812	2,683	5,116	76,743
1973	14,541	4,523	54,333	3,210	6,620	83,227
1980	15,033	5,222	61,671	3,834	9,874	95,634
1987	15,047	5,121	66,469	4,790	14,371	105,798
U.S. total delivered to plants and dealers						
1957	19,783	6,584	59,277	3,473	9,261	98,378
1964	22,636	7,489	69,140	3,980	10,690	113,935
1973	20,337	8,198	63,605	4,620	13,063	109,823
1980	23,439	9,301	68,927	5,864	17,186	124,717
1987	25,740	9,279	73,877	7,535	22,661	139,082
	Percent					
Cooperative percentage of region or U.S. total						
1957	67	50	60	57	43	59
1964	75	56	69	67	48	67
1973	72	55	85	69	51	76
1980	64	56	89	65	57	77
1987	58	55	90	64	63	76

1/ Cooperative data were tabulated by their headquarters locations.
2/ For States included in each region, see figure 2.
3/ Handled either by physical receipt or by bargaining transactions. Volumes shown include both amounts marketed directly for farmers and small amounts purchased from other concerns. Excludes intercooperative transactions.

Table 4—Marketing share of cooperative members' milk, by grade and by production region, and number of producers, selected years 1/

Year and region 2/	Grade A milk: Coopera-tives 3/	Grade A milk: Volume	Grade A milk: Marketing share 4/	Manufacturing grade milk: Coopera-tives 3/	Manufacturing grade milk: Volume	Manufacturing grade milk: Marketing share 4/	Total milk: Coopera-tives 3/	Total milk: Volume	Total milk: Marketing share 4/	Number of producers delivering
	No.	*Mil. lb.*	*Pct.*	*No.*	*Mil. lb.*	*Pct.*	*No.*	*Mil. lb.*	*Pct.*	
1980										
New England	15	3,584	82	0	0	0	15	3,584	82	
Middle Atlantic	108	11,761	62	4	69	87	112	11,830	62	
East North Central	67	26,117	93	96	4,012	53	122	30,129	85	
West North Central	93	11,804	92	121	6,134	71	131	17,938	84	
South Atlantic	25	7,335	81	5/	5/	5/	25	5/	79	
East South Central	14	4,166	84	4	81	12	15	4,247	75	
West South Central	9	5,182	85	5/	5/	5/	9	5/	82	
Mountain	15	3,863	87	6	513	37	17	4,376	75	
Pacific	24	9,507	57	10	295	46	25	9,802	57	
All regions 6/	322	83,319	79	228	11,120	57	420	94,439	76	
1987										
New England	10	3,178	72	0	0	0	10	3,178	72	3,672
Middle Atlantic	93	12,552	59	4	73	75	96	12,625	59	16,343
East North Central	69	27,842	86	63	3,571	50	82	31,413	80	47,378
West North Central	109	14,371	92	107	4,609	72	118	18,980	86	33,361
South Atlantic	19	7,516	82	5/	5/	5/	19	5/	81	4,772
East South Central	9	3,391	67	3	170	34	9	3,561	64	4,659
West South Central	7	5,820	85	5/	5/	5/	7	5/	85	4,698
Mountain	11	5,434	83	5/	5/	5/	11	5/	76	2,513
Pacific	20	13,988	63	10	247	43	20	14,235	63	3,207
All regions 6/	264	94,092	76	144	9,050	57	289	103,142	74	120,603

1/ Includes milk either physically received by cooperatives or marketed by bargaining transactions. Includes only milk from farmer members, and excludes milk received from nonmembers or from cooperative and noncooperative firms. Number of producers is not available for 1980.
2/ For States included in each region, see figure 3.
3/ Cooperatives having members in the region, but not necessarily headquartered there.
4/ Cooperative member volume as a percentage of milk sold to plants and dealers during 1980 and 1987.
5/ Regions not shown when fewer than 3 cooperatives reported or individual cooperative operations might be disclosed.
6/ Numbers of cooperatives do not add to totals because some receive milk from more than one region.

Table 5—Cooperatives' marketing and bargaining of grade A and manufacturing grade raw whole milk, by headquarters region, 1980 and 1987

Product and source	Region 1/						Total	
	Eastern		Central		Western			
	Cooperatives	Volume	Cooperatives	Volume	Cooperatives	Volume	Cooperatives	Volume
	No.	*Mil. lb.*	*No.*	*Mil. lb.*	*No.*	*Mil. lb.*	*No.*	*Mil. lb.*
1980								
Grade A milk:								
Farmers	151	34,806	135	35,999	36	12,826	322	83,631
Noncooperatives	15	431	5	88	6	56	26	575
Other cooperatives	36	5,400	13	2,854	15	2,421	64	10,675
Total 2/	156	40,637	137	38,941	39	15,303	332	94,881
Manufacturing grade milk:								
Farmers	12	271	202	10,084	14	808	228	11,163
Noncooperatives	1	1	6	246	2	17	9	264
Other cooperatives	5	98	23	1,307	4	140	32	1,545
Total 2/	12	370	203	11,637	15	965	230	12,972
1987								
Grade A milk:								
Farmers	120	33,841	120	43,183	24	18,507	264	95,531
Noncooperatives	8	747	34	119	5	118	47	984
Other cooperatives	24	4,606	41	2,909	9	447	74	7,962
Total 2/	123	39,194	121	46,211	24	19,072	268	104,477
Manufacturing grade milk:								
Farmers	7	262	126	8,445	11	535	144	9,242
Noncooperatives	0	0	6	42	1	—	7	42
Other cooperatives	0	0	44	923	2	24	46	947
Total 2/	7	262	127	9,410	11	559	145	10,231

1/ For States included in each region, see figure 4.
2/ Numbers of cooperatives do not add to total because some receive milk from more than one source.
— Negligible

Table 6—Utilization of cooperatively marketed milk, by headquarters region, 1980 and 1987 1/

Year and utilization	Region 2/						Total	
	Eastern		Central		Western			
	Cooperatives	Percent	Cooperatives	Percent	Cooperatives	Percent	Cooperatives	Percent
	Mil. lb.		*Mil. lb.*		*Mil. lb.*		*Mil. lb.*	
1980								
Sold raw	28,954	70.6	26,741	58.9	9,037	55.6	64,732	60.0
Processed or manufactured	12,053	29.4	23,837	41.1	7,231	44.4	43,121	40.0
Total	41,007	100.0	50,578	100.0	16,268	100.0	107,853	100.0
1987								
Sold raw	26,808	67.9	28,080	50.5	7,737	39.4	62,625	54.6
Processed or manufactured	12,648	32.1	27,541	49.5	11,894	60.6	52,083	45.4
Total	39,456	100.0	55,621	100.0	19,631	100.0	114,708	100.0

1/ For milk received from all sources, including from other cooperatives.
2/ For States included in each region, see figure 4.

Table 7—Number of plants owned by cooperatives performing various marketing functions, by plant location, 1987

Marketing function	Plant region 1/									Total
	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific	
	Number									
Receive and ship milk only	11	21	77	124	12	5	9	6	14	279
Make natural cheese	2	6	69	38	0	2	2	7	6	132
Make processed cheese	1	0	2	1	0	1	2	1	1	9
Churn butter	3	4	11	25	1	2	6	5	12	69
Package fluid milk	7	9	11	23	17	4	5	8	8	92
Make dry products 2/	3	3	30	42	1	3	6	6	14	108
Make condensed products	3	4	24	11	1	3	1	3	11	61
Make cottage cheese	3	1	7	9	3	1	1	5	2	32
Make ice cream	3	2	13	14	1	1	1	4	3	42
Not operated in 1987	0	2	5	9	1	0	0	0	0	17
Other activities	4	6	16	22	10	2	1	3	7	70
Total 3/	21	34	155	194	31	12	17	20	24	508

1/ For States included in each region, see figure 3.
2/ Includes dry whey products.
3/ Numbers of plants do not add to totals because some perform more than one function.

Table 8—Number of cooperatives reporting and net volume of whole milk sold raw, by region, selected years 1/

Region 2/	Cooperatives reporting					Volume sold raw					Percentage of all milk marketed by cooperatives				
	1957	1964	1973	1980	1987	1957	1964	1973	1980	1987	1957	1964	1973	1980	1987
	Number					*Million pounds*					*Percent*				
Northeast	3/	185	140	112	94	11,161	13,935	10,909	9,206	10,403	84	82	75	61	58
South Atlantic	3/	46	17	12	11	2,632	2,801	2,903	3,485	3,297	80	67	64	67	64
Central	3/	439	254	193	123	19,220	22,662	33,194	33,331	32,925	54	47	61	54	50
Mountain	3/	17	14	12	7	891	1,362	1,720	2,025	1,561	45	51	54	53	33
Pacific	3/	43	33	23	16	2,309	2,683	3,454	4,448	5,702	58	52	52	45	40
All regions	735	730	458	352	251	36,213	43,443	52,180	52,495	53,640	62	57	63	55	51

1/ Cooperative data were tabulated by their headquarters locations. Adjusted for intercooperative transactions. Includes purchases from other sources. Volume covered by bargaining is included.
2/ For States included in each region, see figure 2.
3/ Data not available.

Table 9—Volume and percentage of butter distributed by cooperatives compared with total U.S. production, by region, selected years 1/

Item and year	Region 2/ Eastern	Central	Mountain	Pacific	United States
			1,000 pounds		
Distributed by cooperatives 3/					
1957	10,489	733,275	32,803	39,113	815,680
1964	22,234	838,448	33,029	44,858	938,569
1973	30,490	465,014	20,645	88,568	604,717
1980	96,492	468,267	23,283	145,104	733,146
1987	76,174	531,574	21,556	287,766	917,070
Total manufactured by all firms					
1957	40,643	1,251,177	59,203	61,825	1,412,848
1964	86,827	1,239,536	48,704	67,380	1,442,447
1973	59,852	666,417	39,150	153,199	918,618
1980	161,046	710,782	33,358	240,068	1,145,254
1987	128,707	631,342	34,150	309,936	1,104,135
			Percent		
Cooperative percentage of total manufactured					
1957	26	59	55	63	58
1964	26	68	68	67	65
1973	51	70	53	58	66
1980	60	66	70	60	64
1987	59	84	63	93	83

1/ Cooperative data were tabulated by their headquarters locations.
2/ For States included in each region, see figure 2. Note that the Eastern Region in this case is the combination of the Northeast and South Atlantic Regions.
3/ Adjusted for intercooperative transactions. Includes purchases from other sources.

Table 10—Size groups of dairy cooperatives distributing butter, for selected years

Item and year	Size group (1,000 pounds)							Total
	Less than 500	500-999	1,000-2,499	2,500-4,999	5,000-9,999	10,000-19,999	20,000-and over	
	Number							
Number of cooperatives								
1964	354	136	142	64	25	8	11	740
1973	120	20	22	19	15	5	6	207
1980	94	9	9	4	9	11	12	148
1987	42	6	5	5	8	5	11	82
	Percent							
Percentage of cooperatives								
1964	48	18	19	9	3	1	2	100
1973	58	10	11	9	7	2	3	100
1980	64	6	6	3	6	7	8	100
1987	51	7	6	6	10	6	14	100
	1,000 pounds							
Group volume 1/								
1964	49,999	100,011	212,730	225,296	173,430	105,600	537,355	1,404,421
1973	8,534	15,331	33,123	70,975	105,132	66,149	467,698	766,942
1980	7,434	6,381	14,025	17,312	64,315	160,254	643,754	913,475
1987	3,761	4,490	7,992	17,959	52,665	74,160	756,043	917,070
	Percent							
Group volume as percentage of total cooperative volume								
1964	4	7	15	16	12	8	38	100
1973	1	2	4	9	14	9	61	100
1980	1	1	2	2	7	17	70	100
1987	2/	2/	1	2	6	8	82	100

1/ Volume not adjusted for intercooperative transactions.
2/ Less than 0.5 percent.

Table 11—Volume of dry milk products distributed by cooperatives compared with total U.S. production, by region, selected years 1/

Item and year	Region 2/ Eastern	Central	Western	United States
		1,000 pounds		
Distributed by cooperatives 3/				
1957	50,879	851,126	104,978	1,006,983
1964	112,019	1,460,362	136,646	1,709,027
1973	76,880	664,576	152,909	894,365
1980	176,623	697,531	251,247	1,125,401
1987	113,405	601,985	441,968	1,157,358
Total manufactured by all firms				
1957	199,625	1,409,747	155,847	1,765,219
1964	330,912	1,870,705	176,396	2,378,013
1973	106,613	721,664	219,285	1,047,562
1980	252,129	695,498	346,595	1,294,222
1987	195,484	584,341	498,283	1,278,108
		Percent		
Cooperative percentage of total manufactured				
1957	25	60	67	57
1964	34	78	77	72
1973	72	92	70	85
1980	70	4/ 100	72	87
1987	58	4/ 103	89	91

1/ Cooperative data were tabulated by their headquarters locations.
2/ For States included in each region, see figure 2. Note that the Eastern Region is the combination of the Northeast and South Atlantic Regions. The Western Region is the combination of the Mountain and Pacific Regions.
3/ Adjusted for intercooperative transactions. Includes purchases from other sources.
4/ Reflects slightly different reporting periods (fiscal versus calendar year) and/or inventory adjustments.

Table 12—Size groups of dairy cooperatives distributing dry milk products, selected years

Item and year	Size group (1,000 pounds)						Total
	Less than 1,000	1,000-2,499	2,500-4,999	5,000-9,999	10,000-19,999	20,000-and over	
				Number			
Number of cooperatives							
1964	39	22	38	62	29	22	212
1973	11	10	3	18	10	10	62
1980	5	4	3	6	11	19	48
1987	3	0	1	6	10	11	31
				Percent			
Percentage of cooperatives							
1964	19	10	18	29	14	10	100
1973	18	16	5	29	16	16	100
1980	10	8	6	13	23	40	100
1987	10	0	3	19	32	36	100
				1,000 pounds			
Group volume 1/							
1964	15,317	41,027	145,240	438,347	407,704	1,395,086	2,442,721
1973	2,740	16,234	10,336	127,045	136,488	778,198	1,071,041
1980	1,421	6,754	10,734	49,107	152,999	1,058,533	1,279,549
1987	659	0	2/	3/ 52,335	152,040	964,907	1,169,941
				Percent			
Group volumes as percentage of total cooperative volume							
1964	4/	2	6	18	17	57	100
1973	4/	1	1	12	13	73	100
1980	4/	1	1	3	12	82	100
1987	4/	0	2/	3/ 4	13	82	100

1/ Volume not adjusted for intercooperative transactions.
2/ Included in the next size group.
3/ Includes the previous size group.
4/ Less than 0.5 percent.

Table 13—Volume of cheese marketed by cooperatives compared with total U.S. production, by region, selected years 1/

Item and year	Region 2/ Eastern	Central	Mountain	Pacific	United States
			1,000 pounds		
Cheese marketed by cooperatives 3/					
1957	5,044	206,661	14,274	26,966	252,945
1964	10,435	312,492	21,120	21,855	365,902
1973	39,025	798,830	61,037	27,555	926,447
1980	336,302	1,347,041	106,424	83,468	1,873,235
1987	4/ 2,100,030		191,334	132,973	2,424,337
Total manufactured by all firms					
1957	132,309	1,190,665	45,460	38,995	1,407,429
1964	180,287	1,444,242	61,355	44,689	1,730,573
1973	300,841	2,161,617	133,354	89,538	2,685,350
1980	560,155	2,951,683	211,135	261,293	3,984,266
1987	4/ 4,492,213		270,423	581,728	5,344,364
			Percent		
Cooperative percentage of total manufactured					
1957	4	17	31	69	18
1964	6	22	34	49	21
1973	13	37	46	31	35
1980	60	46	50	32	47
1987	4/ 47		71	23	45

1/ Cooperative data were tabulated by their headquarters locations. Includes all types of cheese except cottage cheese.
2/ For States included in each region, see figure 2. Eastern Region is combination of Northeast and South Atlantic Regions.
3/ Includes purchases from other sources, some of which may be manufactured in another area. Does not include purchases from other cooperatives.
4/ Combination of the Eastern and Central Regions.

Table 14—Size groups of dairy cooperatives distributing cheese, selected years

Item and year	Size group (1,000 pounds) Less than 500	500-999	1,000-2,499	2,500-4,999	5,000-9,999	10,000 and over 1/	10,000-19,999	20,000-39,999	40,000-99,999	100,000 and over	Total
						Number					
Number of cooperatives											
1964	143	57	63	16	9	6					294
1973	57	31	40	27	11	21					187
1980	41	12	36	23	13		13	8	7	5	158
1987	22	5	19	11	7		10	6	10	4	94
						Percent					
Percentage of cooperatives											
1964	49	19	21	6	3	2					100
1973	31	17	21	14	6	11					100
1980	26	8	23	14	8		8	5	5	3	100
1987	23	5	20	12	8		11	6	11	4	100
						1,000 pounds					
Group volume 2/											
1964	26,939	41,553	99,881	54,043	59,222	130,656					412,294
1973	9,215	24,575	63,565	89,500	76,870	799,492					1,063,217
1980	4,602	8,506	63,606	76,520	90,251		202,297	237,479	342,921	986,289	2,012,471
1987	1,336	3,407	37,745	36,168	46,412		154,182	161,862	646,677	1,336,550	2,424,339
						Percent					
Group volume as percentage of total cooperative volume											
1964	7	10	24	13	14	32					100
1973	1	2	6	9	7	75					100
1980	3/	3/	3	4	4		10	12	17	49	100
1987	3/	3/	2	1	2		6	7	27	55	100

1/ For 1964 and 1973, this size group was not further divided.
2/ Volume not adjusted for intercooperative transactions.
3/ Less than 0.5 percent.

Table 15—Volume of packaged fluid milk products distributed by cooperatives compared with all processors, by region, selected years 1/

Region 2/	Distributed by cooperatives 3/				Total distributed by all processors 4/				Cooperative percentage of total			
	1964	1973	1980	1987	1964	1973	1980	1987	1964	1973	1980	1987
	Million pounds								Percent			
Northeast	1,173	1,847	1,945	1,737	14,208	13,600	13,377	13,821	8	14	15	13
South Atlantic	974	1,077	1,149	722	5,732	7,541	6,660	6,766	17	14	17	11
Central	1,635	2,606	4,097	3,930	23,172	24,628	20,332	21,931	7	11	20	18
Western	989	1,185	1,010	972	9,142	9,867	10,263	11,799	11	12	10	8
All regions	4,771	6,715	8,201	7,361	52,254	55,636	50,632	54,317	9	12	16	14

1/ Cooperative data were tabulated by their headquarters locations. Based on product pounds.
2/ For States included in each region, see figure 2. Western region is the combination of Mountain and Pacific regions.
3/ Adjusted for intercooperative transactions. Based on reported quart equivalent of products sold.
4/ Based on total pounds of milk sold to all plants and dealers less whole milk equivalent used in manufactured products.

Table 16—Size group of dairy cooperatives distributing packaged fluid milk product, selected years

Size group (1,000 quarts)	Number of cooperatives				Percentage of cooperatives				Group volume 1/				Percentage of total cooperative volume			
	1964	1973	1980	1987	1964	1973	1980	1987	1964	1973	1980	1987	1964	1973	1980	1987
	Number				Percent				1,000 quart equivalent				Percent			
Less than 1,000	84	14	10	4	39	16	17	12	24,684	3,566	1,512	402	1	2/	2/	2/
1,000 - 2,499	22	4	3	1	10	5	5	3	33,535	7,626	5,524	3/	2	2/	2/	3/
2,500 - 4,999	30	12	5	2	14	14	9	6	108,372	45,191	17,936	4/ 9,739	5	1	2/	2/4/
5,000 - 9,999	26	8	9	6	12	9	15	17	183,848	59,676	63,302	43,297	8	2	2	1
10,000 - 19,999	21	10	5	3	10	12	9	9	297,560	151,476	73,132	46,892	13	5	2	1
20,000 and over 5/	32	37			15	44			1,575,774	2,855,926			71	91		
20,000 - 49,999			6	3			10	9			199,526	129,749			5	4
50,000 - 99,999			6	6			10	18			423,304	443,546			11	13
100,000 and over			15	9			25	26			3,039,357	2,672,126			79	80
Total	215	85	59	34	100	100	100	100	2,223,773	3,123,461	3,823,593	3,345,751	100	100	100	100

1/ Volume not adjusted for intercooperative transfers.
2/ Less than 0.5 percent.
3/ Included in the next size group.
4/ Includes the previous size group.
5/ For 1964 and 1973, this size group was not further divided.

Table 17—Volume of selected products distributed by cooperatives compared with total U.S. production, selected years

Product	Distributed by cooperatives 1/			Total U.S. manufactured			Cooperative percentage of total		
	1973	1980	1987	1973	1980	1987	1973	1980	1987
	Million pounds						Percent		
Bulk condensed milk	237	139	622	1,115	952	1,383	21	15	45
Condensed whey	67	51	69	174	86	73	38	59	95
Cottage cheese	143	220	195	1,086	1,004	1,519	13	22	13
Dry whey products	433	560	913	772	690	1,097	56	81	83
Frozen dairy product mix 2/	45	41	73	614	635	725	8	7	10
Ice cream and ice milk	59	118	98	1,159	1,168	1,306	5	10	8

1/ Adjusted for intercooperative transactions. Includes purchases from sources other than cooperatives.
2/ Frozen product mix sold by cooperatives was the total of ice cream mix and ice milk mix, whereas total U.S. manufactured was the sum of ice cream mix, ice milk mix, and milk sherbet mix.

Table 18—Size groups of dairy cooperatives distributing cottage cheese, selected years

Size group (1,000 pounds)	Number of cooperatives				Percentage of cooperatives				Group volume 1/				Percentage of total cooperative volume			
	1964	1973	1980	1987	1964	1973	1980	1987	1964	1973	1980	1987	1964	1973	1980	1987
	Number				Percent				1,000 pounds				Percent			
Less than 500	82	28	16	5	64	43	36	21	10,515	3,323	1,716	493	8	2	1	2/
500 - 999	15	10	3	3	12	16	7	13	10,302	7,193	2,611	2,229	8	5	1	1
1,000 - 2,499	15	9	7	2	12	14	16	9	22,576	15,355	10,202	3/	17	11	4	3/
2,500 - 4,999	7	7	4	2	6	11	9	9	24,265	25,993	15,748	4/ 11,411	19	18	7	4/ 6
5,000 and over 5/	7	10			6	16			62,518	91,432			48	64		
5,000 - 9,999			7	5			16	22			56,818	31,048			24	15
10,000 and over			7	6			16	26			145,063	160,390			63	78
Total	126	64	44	23	100	100	100	100	130,176	143,296	232,158	205,571	100	100	100	100

1/ Volume not adjusted for intercooperative transactions.
2/ Less than 0.5 percent.
3/ Included in the next size group.
4/ Includes the previous size group.
5/ For 1964 and 1973, this size group was not further divided.

Table 19—Size groups of dairy cooperatives distributing ice cream and ice milk, selected years

Size group (1,000gallons)	Number of cooperatives				Percentage of cooperatives				Group volume 1/				Percentage of totall cooperative volume			
	1964	1973	1980	1987	1964	1973	1980	1987	1964	1973	1980	1987	1964	1973	1980	1987
	Number				*Percent*				*1,000 gallons*				*Percent*			
Less than 100	87	29	14	8	61	48	37	38	2,523	490	466	184	5	1	2/	2/
100 - 999	39	12	6	4	27	20	16	19	11,306	5,895	1,580	1,216	22	10	1	1
1,000 and over 3/	17	19			12	32			38,603	52,362			74	89		
1,000 - 1,999			3	2			8	10			4,037	4/			3	4/
2,000 - 3,999			6	2			16	10			17,186	5/ 8,047			15	5/ 8
4,000 - 9,999			5	2			13	10			31,702	4/			27	4/
10,000 and over			4	3			10	14			63,362	5/88,336			54	5/ 91
Total	143	60	38	21	100	100	100	6/100	52,432	58,747	118,333	97,783	6/100	100	100	100

1/ Volume not adjusted for intercooperative transactions.
2/ Less than 0.5 percent.
3/ For 1964 and 1973, this size group was not further divided.
4/ Included in the next size group.
5/ Includes the previous size group.
6/ Size group percentages do not add up to 100 due to rounding.

Table 20—Cooperatives distributing bulk condensed milk and dry whey products, volume by size groups, selected years

Product and cooperative size group	Number of cooperatives			Percentage of cooperatives			Group volume 1/			Percentage of total cooperative volume		
	1973	1980	1987	1973	1980	1987	1973	1980	1987	1973	1980	1987
	Number			*Percent*			*Thousand pounds*			*Percent*		
Bulk condensed milk:												
Less than 5 million pounds	18	11	3	55	48	15	35,217	19,412	4,266	14	12	1
5.0 to 9.9 million pounds	7	6	4	21	26	20	41,846	41,990	30,188	17	28	5
10 million pounds and over	8	6	13	24	26	65	175,208	91,032	588,134	69	60	94
Total	33	23	20	100	100	100	252,271	152,434	622,588	100	100	100
Dry whey products:												
Less than 5 million pounds	20	9	3	62	35	14	33,335	17,815	1,851	8	3	2/
5.0 to 19.9 million pounds	6	8	7	19	30	32	51,463	98,564	87,723	12	14	10
20 million pounds and over	6	9	12	19	35	54	347,977	560,642	825,820	80	83	90
Total	32	26	22	100	100	100	432,775	677,021	915,394	100	100	100

1/ Volume not adjusted for intercooperative transactions.
2/ Less than 0.5 percent.

Table 21—Percentage of grade A milk received from farmers, milk processed or manufactured, and selected product sales for largest dairy cooperatives, selected years 1/

Item	Receipts of grade A milk 2/			Milk processed or manufactured			Sales: Packaged fluid milk			Sales: Butter			Sales: Dry milk products			Sales: Natural cheese		
	1973	1980	1987	1973	1980	1987	1973	1980	1987	1973	1980	1987	1973	1980	1987	1973	1980	1987
	Percentage of all cooperative sales																	
Share of total cooperative volume:																		
4 largest cooperatives	38	32	32	34	32	37	35	39	58	54	48	54	53	41	50	40	53	55
8 largest cooperatives	51	45	46	42	47	55	51	58	77	65	61	73	68	56	73	54	73	68
20 largest cooperatives	67	66	74	59	68	81	75	89	98	79	84	94	85	84	94	74	78	88
	Percentage of total U.S. production																	
Share of total U.S. volume:																		
4 largest cooperatives	31	26	25	10	19	15	4	6	8	34	26	45	46	36	46	13	19	25
8 largest cooperatives	41	36	35	12	27	23	6	9	10	41	36	60	57	50	66	18	26	31
20 largest cooperatives	54	52	56	17	40	34	9	14	13	51	53	78	72	74	86	25	36	40

1/ Groups of cooperatives may change from function to function. Volume adjusted for intercooperative transactions.
2/ Grade A milk received from farmers.

Table 22—Pricing methods used by dairy cooperatives to pay for member milk

Method of pricing member milk	Number of cooperatives	Milk volume priced
		Million pounds
1. Traditional method of paying for milk adjusted for butterfat	86	37,082
2. Traditional method of paying for milk adjusted for butterfat, and for other component(s)	50	33,292
3. Pricing on milk components	7	10,159
4. Basing price on product yields	3	409
5. Using both methods 1 and 2	3	1,724
6. Using both methods 1 and 4	1	1/
7. Using both methods 2 and 3	1	1/
8. Using both methods 2 and 4	2	1/
9. Using methods 1, 2, and 3	2	1/
Total responding	155	89,457
Percentage of total cooperatives	52%	87%

1/ Not reported to avoid revealing proprietary information.

Table 23—Pricing incentives offered by dairy cooperatives

Incentive	Number of cooperatives	Milk volume involved
		Million pounds
Quality premium	44	23,443
Seasonal premium	1	1/
Quality and volume premiums	31	12,714
Quality and seasonal premiums	4	1/
Quality, volume, and seasonal premiums	6	8,269
Cooperatives with incentive programs responding to survey	86	48,857
Percentage of all dairy cooperatives	29%	47%

1/ Not reported to avoid revealing proprietary information.

Table 24—Cooperatives using various pricing methods for paying member milk and those offering incentive programs

Method of pricing member milk	Number of coopera-tives using pricing method 1/	Number of coopera-tives offering incentive programs	Percentage with incentive programs
1. Traditional method of paying for milk adjusted for butterfat	92	34	37%
2. Traditional method of paying for milk adjusted for butterfat, and for other component(s)	58	53	91%
3. Pricing on milk components	10	5	50%
4. Basing price on product yields	6	4	67%

1/ From table 22. A cooperative might use one or more methods for pricing member milk. A total of 155 cooperatives responded to the pricing question.

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